Data Communication Networking
(EE2T21 – Academic Year 2019 - 2020)

Contact Information

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Online Office Hours

Fridays, 12.30 to 13:30 or by appointment.
Office hours are designed for students to get extra chance to ask questions. Similar to lectures, office hours will be conducted through YouSeeU. Meetings will last 1 hour each, provided there are sufficient questions.

Important: Meetings may end early if all questions are addressed.

Important: All office hour questions are due the day before the meeting, i.e., Thursday.

Course Description:

This part of the course provides an introduction to telecommunication networks, which includes Local Area Networks, Error Control and Retransmission Protocols, the Internet, and Routing Algorithms and Protocols.

The student will learn to:

1. Explain the functionalities with which modern end-to-end communication in data communication networks is achieved.

2. Explain the architecture and design concepts that underlie the internet and its protocols.

3. Perform elementary calculations and performance analyses on small networks.

4. Implement basic mathematical coding and routing algorithms that have inspired error correction methods and routing protocols in networks.

Textbook and Course Materials

The course will closely follow Chapters 1 through 7.5 of the "*Data Communications Networking*" book by Prof. Piet van Mieghem, second edition, 2011. **The textbook is available from the VSSD union.**

All other course materials can be found on the BrightSpace.

Grading

The only grade you will receive is that of the final written exam, which will be done online. Your exam grade will be complemented by the score you will receive for the bonus assignment as follows:

FinalGrade = ExamGrade + BonusGrade(10 - ExamGrade)/100

where BonusGrade is the grade for the Bonus Assignment and the ExamGrade is the grade for the Online Written Exam.

As requested by the Board of Examiners, the final grade will be **PASS or FAIL**. Your Final Grade will be converted into the binary PASS/FAIL grade as follows: FinalGrade >= 5.75 results in the PASS grade. FinalGrade < 5.75 results in the FAIL grade.

Course Composition:

Lectures

Lectures will be conducted in online format through the YouSeeU platform. Each lecture will last for up to 2 hours with two 10-minute breaks.

Lectures will be recorded.

Recorded lectures and slides in pdf format will be available through the BrightSpace.

Practical Problems and Discussion Questions

Each lecture will be accompanied by practical problems and discussion questions. Even though I will not grade them, I strongly encourage you to solve them as the written exam might contain some variations of these problems and questions. We will discuss solutions to select questions during our Discussion Meetings.

Discussion Meetings

In addition to 7 lectures we will have 3 discussion meetings. These meetings will give us an opportunity to clarify challenging concepts, do practice problems and answer questions.

Q&A Session

Q&A session is your last chance to ask questions before the exam.

Office Hours

Office hours give you another possibility to ask questions on anything related to the course. Office hours will be done online on Fridays from 12.30 to 13.30 and will last for as long as there are questions. For improved efficiency, I request for all questions to be submitted the day before.

Bonus Assignments

You will have two bonus assignments. Both assignments will be **done in groups of three** (although individual solutions are also acceptable). All assignments will involve basic computer programming. Preferred programming languages are C++/Python/Matlab. While other programming languages are not prohibited, **please do let me know as soon as possible if you are planning to use a different programming language**.

It is important for you to start planning ahead on your team composition and the programming language that you will use.

Written Exam

Written exam will be conducted in the same format as that of Part 1 in the course. This will be an open-book 2 hour long online exam. You will need to sign the **Honour Code** in order to take the exam. Further details (and changes, if necessary) will be communicated through the BrightSpace Announcements.

Course Schedule (Academic Year 2019 – 2020)

This is a *tentative* schedule for our course. Changes to the schedule (if any) will be communicated through announcements and the document will be updated promptly.

Date	***Activity***
Thursday, May 28th	**Prepare:** Read Chapter 1. **Lecture:** Introduction to data communication networks (Chapter 1). **Homework:** Review Chapter 1; Practice problems (with colleagues).
Friday, May 29th	**Prepare:** Read Chapter 2. **Lecture:** Local Area Networking (Chapter 2). **Homework:** Review Chapter 2; Practice problems (with colleagues).
Tuesday, June 2nd	**Prepare:** Read Chapter 3. **Lecture:** Error control and retransmission protocols (Chapter 3). **Homework:** Review Chapter 3; Practice problems (with colleagues).
Thursday, June 4th	**Discussion 1:** Lecture Overflow + Practical Aspects of Chapters 1,2, and 3 + Solutions to practice problems.
Friday, June 5th	**Prepare:** Read Chapter 4. **Lecture:** Architectural principles of the Internet (Chapter 4). **Homework:** Review Chapter 4; Practice problems (with colleagues).
Tuesday, June 9th	**Prepare:** Read Chapter 5. **Lecture:** Flow control protocols in the Internet (Chapter 5). **Homework:** Review Chapter 5; Practice problems (with colleagues).
Thursday, June 11th	**Deadline: Bonus Assignment 1 due.** **Discussion 2:** Lecture Overflow + Practical Aspects of Chapters 1,2, and 3 + Solutions to practice problems.
Friday, June 12th	**Prepare:** Read Chapter 6. **Lecture:** Routing algorithms (Chapter 6). **Homework:** Review Chapter 6; Practice problems (with colleagues).
Tuesday, June 16th	**Prepare:** Read Chapter 7.1 – 7.5 **Lecture:** Routing protocols (Chapter 7). **Homework:** Review Chapter 7 (not beyond Section 7.5); Practice problems (with colleagues).
Thursday, June 18th	**Discussion 3:** Lecture Overflow + Practical Aspects of Chapters 1,2, and 3 + Solutions to practice problems.

Friday, June 19th	**Deadline: Bonus Assignment 2 due.** **Q&A Session.**